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# **Follow-Up Evaluation of Wisconsin's 1982 Drinking and Driving Law**

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| 16. Abstract<br>A previous study examined the deterrent effects of Wisconsin's 1982 law mandating three to six month license suspension for first-time convicted drinking drivers. This earlier study found that: crashes and violations were reduced during the first three to six months following conviction for convicted drinking drivers (i.e., during the period of suspension); there was a statewide reduction in alcohol related crashes for the years 1982 to 1985 suggesting an overall or general deterrent effect of the law; and a 1985 media program in Milwaukee was successful in increasing motorist awareness of the law. The present study extended the analysis of subsequent crashes and violations for convicted drinking drivers to 24 months from the 12 months covered in the original study. The results showed that the effects reported in the earlier study were not diminished during the longer time period. The present study also extended the statewide alcohol related crash data to the year 1986 and found a continuation of the earlier reported crash reduction. Lastly, the present study re-examined driver knowledge and attitudes in Milwaukee and found some continuing effects of the 1985 media program. |  |  |   |  |  |
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An earlier study (Deterrent Effects of Mandatory License Suspension for DWI Conviction) examined the 1982 Wisconsin Operating While Intoxicated Law (OWI) in terms of its effects on the general population of Wisconsin (general deterrence) and its effects on the subsequent drinking and driving of those individuals convicted under the new law (specific deterrence). A key feature of this legislation was mandatory three to six month license suspension for a first OWI conviction. Beginning in May of 1982, all OWI convicted drivers lost their license for at least 90 days.

The results of this earlier study showed an overall reduction in alcohol related crashes following the passage of the 1982 law and a reduction in the repeat drinking and driving of OWI convicted individuals. In addition, a 1985 media program conducted in Milwaukee increased motorist awareness of the mandatory license suspension aspect of the law.

However, the earlier study was limited by the number of months during which the effects could be tracked. Therefore, the purpose of the present study was to extend data collection beyond the time period of the earlier study. Specifically, the present effort re-examined motorist awareness of the law in Milwaukee approximately three years after the 1985 media program, added crash data from 1986 to the already available data covering 1977-85, and re-accessed Wisconsin driver records to track subsequent crashes and violations for OWI convicted drivers beyond the twelve months covered in the earlier study.

Motorist Awareness

A public information program was conducted in Milwaukee during the early part of 1985. The theme of this program was that loss of license is "Guaranteed" under Wisconsin law following an OWI conviction. The effects of the program were measured by a series of paper and pencil motorist surveys conducted by the Milwaukee Safety Commission at driver licensing stations between November, 1984 and June, 1985. A follow-up survey was conducted by the same commission as part of the present effort in March, 1988.

During the baseline survey (November, 1984), 48% of Milwaukee drivers responded "loss of license" to the question "What penalties are required upon a first OWI conviction?" This figure peaked at 75% during May of 1985

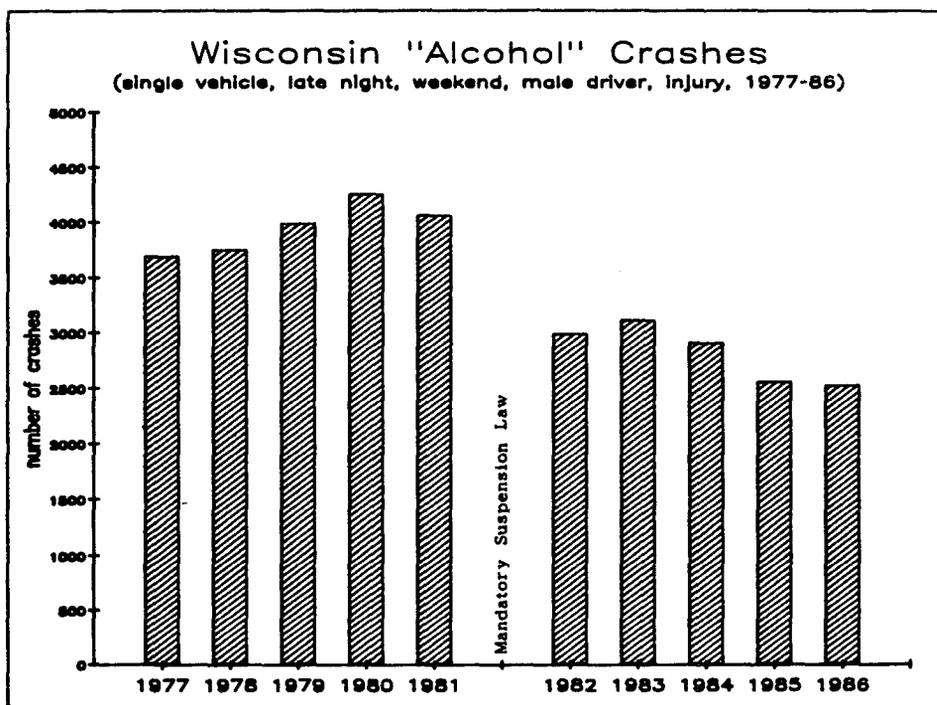
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approximately four to five months into the media campaign. The comparable figure in March, 1988 was 65%. Thus, driver knowledge of certain loss of license was below the peak of the media program yet well above the 1984 baseline. Similar results were seen for recall of program materials and questionnaire items related to OWI enforcement and adjudication.

### Alcohol Related Crashes

Time series analysis was used to examine Wisconsin crash data for the years 1977 to 1985 in the earlier report. For these analyses, a surrogate measure for "alcohol" related crashes was used. This surrogate consisted of the monthly tabulation, 1977 to 1985, of crashes that were single vehicle, night, weekend, injury producing and involved a male driver. Previous research has shown that each of these characteristics is related to alcohol involvement and, when all of these characteristics are present, the probability of alcohol involvement is high. The results showed a statistically significant reduction (approximately 25%) in these crashes beginning in January, 1982 which was several months after passage of the 1982 law, several months before implementation and coincident with a statewide media campaign announcing the law. The present study added 1986 to the earlier data. As shown below, the number of "alcohol" crashes in 1986 was comparable to the 1982 to 1985 period and represents a continuation of the "alcohol" crash reduction which began in 1982.

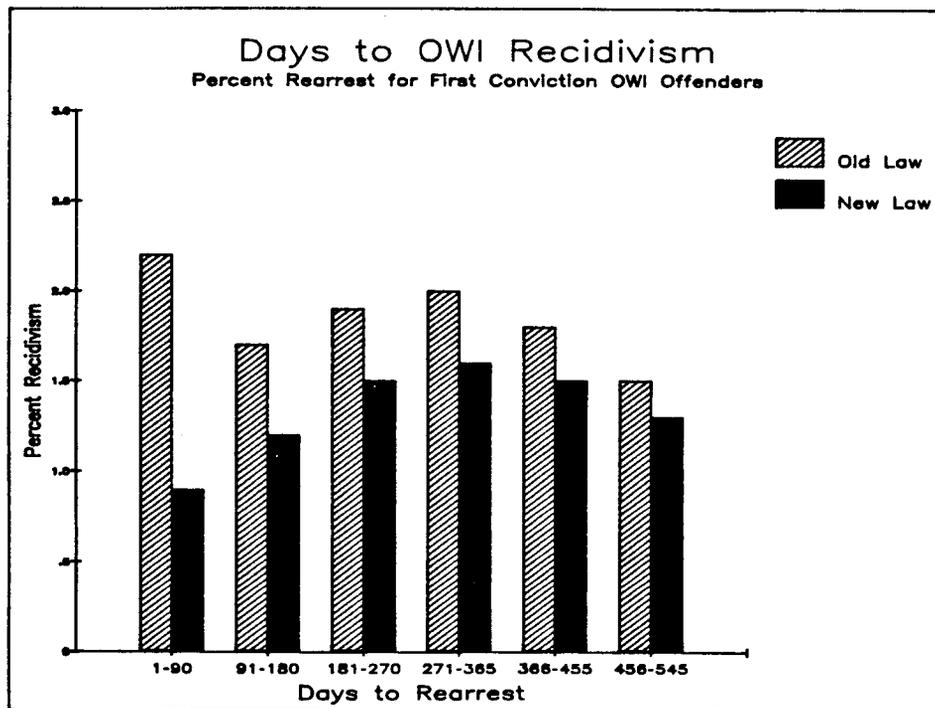


The earlier study showed that the statewide 1982 crash reduction was equally apparent in Milwaukee. There was also evidence for additional crash reduction in Milwaukee associated with the 1985 media program. However, the evidence for additional crash reduction was not conclusive. The present study repeated these analyses with the inclusion of data for 1986. The results again showed some evidence for crash reduction associated with the 1985 program, but, as before, the evidence was not conclusive.

## Recidivism

A primary objective of the 1982 law was to reduce repeat drinking and driving among first time OWI convicted drivers. The subsequent driving records for a sample of drivers convicted under the "Old Law" were compared to the subsequent driving records of a sample of drivers convicted under the "New Law." The results for the first twelve months following conviction showed that fewer "New Law" drivers had repeat convictions for OWI, injury crash involvements, involvements in crashes of any kind and convictions for non-alcohol moving violations. Reductions were most apparent during the first three months following conviction when all of the "New Law" drivers were under license suspension or revocation.

The present study extended these analyses beyond the twelve months covered in the earlier study. The results paralleled the earlier findings and showed fewer crash and violation involved drivers from the "New Law" group through the first 18 months of subsequent driving. The results for OWI recidivism are shown below. A similar pattern of results was seen for injury crash involvements, involvements in crashes of any kind and convictions for non-alcohol moving violations.



## Conclusions

The 1982 Wisconsin OWI law changed many aspects of arrest, adjudication, sanctioning and rehabilitation of drinking and driving offenders. Any one or all of these changes could have contributed to the findings reported here. Nevertheless, it is felt that the key feature of this legislation was mandatory license suspension for first offenders and that mandatory suspension is an effective general and specific deterrent for drinking and driving.

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## I. INTRODUCTION

This is the final report under Contract Number DTNH22-88-P-07064 between the National Highway Traffic Safety Administration (NHTSA), and Dunlap and Associates, Inc. The project is entitled "Study of the Longer Range Effects of Wisconsin's 1982 DWI Law on Alcohol-Related Accidents, Recidivism and Driver Attitudes.

The present study was a follow-up effort from Contract Number DTNH22-83-C-07014. This earlier study, entitled "Deterrence Value of Traditional DWI Sanctions," examined the effects of the 1982 Wisconsin Operating While Intoxicated Law (OWI) in terms of its effects on the general population of Wisconsin and on the subsequent drinking and driving of individuals convicted under the law. This earlier effort also covered a public information and education campaign in Milwaukee designed to heighten awareness of the law among Milwaukee drivers. The key feature of the 1982 law was felt to be mandatory 306 month license suspension for first offenders.

The results from this earlier study showed positive effects:

- o an increase in knowledge about the law among those Milwaukee drivers exposed to the media program
- o a statewide reduction in "alcohol" related crashes following passage of the law
- o and a reduction in repeat drinking and driving (and subsequent crash involvements) for those drivers convicted under the new 1982 law (which included mandatory license suspension).

However, the study was limited in the number of months that these effects could be tracked. Therefore, the purpose of the present contract was to extend these earlier findings by tracking drinking and driving for a longer period of time. Specifically, the present effort was designed to determine whether these previous findings were short-term or lasting effects. The present report covers three follow-up data collection activities described as follows:

1. Attitude and Knowledge surveys were conducted in Milwaukee as part of the evaluation of the 1985 public information and education campaign designed to increase Milwaukee motorist awareness of the mandatory license suspension aspect of the 1982 law. The last of these surveys was done in June, 1985. The present report covers a follow-up survey conducted in March, 1988. The purpose of this survey was to measure motorist remembrance of the 1985 campaign and to measure their knowledge of the law.
2. Crash Data for both Wisconsin and Milwaukee were analyzed for the years 1977 to 1985 in the earlier report. The present report extends the crash data analyses to include 1986.

3. Recidivism analyses were conducted for a group of drivers convicted before the enactment of the 1982 law and a group of drivers convicted after the law. The results showed that drivers convicted under the new law, with a mandatory 3-6 month license suspension, had better subsequent driving records particularly during the first 3-6 months. However, this earlier analysis was limited to 12 months of subsequent driving. The present report extends these analyses to cover the subsequent 18-24 months of driving following conviction.

Reference will be made throughout this report to "general" and "specific" drinking and driving deterrence. General deterrence refers to reducing drinking and driving among the general public and specific deterrence refers to reducing repeat drinking and driving among those who have been convicted of OWI. The survey data analysis is thus concerned with the general deterrence effects of the 1985 Milwaukee media campaign as it increased awareness of the mandatory license suspension aspects of the 1982 law. The crash data analysis also covers general deterrence both statewide in response to the 1982 law and in Milwaukee in response to the 1985 media campaign. The recidivism analysis deals with the question of specific deterrence for those convicted under the 1982 law.

It should also be noted that the acronyms "OWI" and "DWI" should be considered as equivalent. OWI, operating while intoxicated, will be used in reference to the specific law in Wisconsin. DWI, driving while intoxicated, will be used as the more common reference to the drinking and driving laws found across the country.

The remainder of this report is organized into five sections. The first of these sections, II. Background, covers the selection of Wisconsin as a test site, the elements of the 1982 law, the 1985 media campaign and a general description of the findings from the earlier contract. Readers familiar with the earlier study may wish to skip this section. The next three sections cover the results from the three data collection activities listed above respectively. The last section provides a brief discussion of the findings.

## II. BACKGROUND

The problem of drinking and driving has been a major highway safety concern for some time. Numerous efforts have been mounted by federal, state and local governments as well as private organizations to reduce the role alcohol plays in highway deaths and injuries. One obvious way to accomplish this reduction is by deterring driving after the consumption of a quantity of alcohol which would raise a person's blood alcohol concentration (BAC) to a point at which accident risk is greatly increased.

One class of countermeasures which is universally applied to the deterrence of drinking and driving is legal sanctions. In most state laws, there are vehicle and traffic sections as well as criminal statutes which address driving while intoxicated or under the influence of alcohol. Operationally, these laws provide a definition of the offense and specify sanctions for drivers convicted of a violation. It is anticipated that the contemplation of the applicable sanctions will deter people from committing the offense and that those exposed to the sanctions (i.e., those actually convicted) will be deterred from repeating the offense.

NHTSA embarked on a research program to examine the relationships between sanctions and deterrence. This program divided sanctions into "traditional", such as fines and license actions, and "innovative" such as mandatory community service. The traditional sanctions were the subject of the present line of research. Within the traditional sanctions, the focus was on mandatory short-term license suspension (typically 3-6 months) for first time DWI offenders.

Suspension of a convicted DWI's license has been a generally available judicial or administrative sanction for some time. However, the notion of mandating this sanction and thereby eliminating its discretionary employment in the sanctioning process is relatively new. It has been postulated that the sure, unavoidable loss of a driver's license would provide a greater deterrent effect than a possible suspension which might be avoided through plea bargaining or opting for an alternative such as entry into an alcohol education program. Short-term suspensions as opposed to longer-term license suspensions or revocations (i.e. 6 months to 1 year duration) were selected for study because they appear to be amenable to legislative adoption, likely to be viewed as "appropriate" by the general public and less likely to be ignored by those to whom the sanction was applied. That is, they are postulated to be sufficiently strong to yield a meaningful deterrent effect while not being viewed as so harsh as to discourage legislative enactment or causing disruption by significantly increasing contested case loads.

In order for a short-term, mandatory suspension law, or any law for that matter, to operate as a deterrent, its existence and consequences must be known by the target population. In the context of this study, then, the large majority of alcohol-using drivers would have to be aware of the fact that a first conviction for DWI would lead without fail to a loss of the driving privilege for a minimum of 90 days. To the extent that this fact is not known by the driving population, the law cannot be fully operative as a deterrent. One problem, therefore, which faced the current effort was to identify an

environment in which a mandatory short-term suspension law for a first conviction DWI was sufficiently operative to support an examination of its deterrent effect. A second problem was that an operative mandatory suspension law would, in fact, have to be applied to all first time convicted DWI drivers. The law could not simply represent legislative intention but had to represent actual practice.

The remainder of this section will discuss the selection of Wisconsin as the site for the original 1985 study and the Wisconsin mandatory suspension legislation. This section will then briefly summarize the work conducted in the 1985 study: the public information and education campaign that was conducted in Milwaukee to heighten awareness of this legislation; the analysis of crash data that was used to evaluate general deterrence; and the analysis of driver records that was used to evaluate its specific deterrent effects.

#### A. Site Selection

Most states allow for license suspensions or revocations of one month to one year for a first conviction of drinking driving. Longer suspensions are common for second and third convictions. This suspension/revocation is listed as "mandatory" in several states, but a 1984 review of actual practice as well as site visits revealed that few states suspended or revoked the licenses of all or nearly all drivers following a first conviction. Clearly, the selected site would have universal or nearly universal application of the short-term suspension sanction.

Ideally, the selected site would also have recently gone to mandatory sanctioning such that some form of pre versus post comparisons would be possible. Alternatively, a state may have had mandatory short-term license suspension for some time but drivers might be generally unaware of this provision of the law. In this case, the law would not be fully "operable" at least from the point of view of general deterrence. It could be made fully operable by a public information and education campaign designed to inform all motorists of the mandatory suspensions.

Following site visits to several states, the selected test state was Wisconsin for the original 1985 study. Wisconsin had adopted short-term mandatory suspension in 1981 to become effective on May 1, 1982. General deterrence could be measured on the basis of the number of alcohol related crashes before and after the "new" law and specific deterrence could be measured by comparing the subsequent driving records of individuals convicted under the provisions of the "new" law versus the provisions of the "old" law. In addition, a survey conducted in Milwaukee in late 1984 indicated that while drivers knew there were significant penalties for a drinking and driving conviction, they were generally unaware of the absolute, 100% mandatory suspension provision of the law. Therefore, a public information and education campaign was conducted in Milwaukee to increase awareness and measure any general deterrent effects.

#### B. Wisconsin Law

In 1981, Wisconsin enacted new and greatly strengthened drinking and driving legislation referred to as "Chapter 20" of the state budget bill. The major elements of this new legislation became effective on May 1, 1982. The

legislation included an illegal per se (.10%) provision, possible impounding of the vehicle of someone driving while under suspension, a \$150 surcharge on the fine, mandatory minimum three month license suspension and a provision discouraging plea bargaining to a lesser charge. The law also strengthened the existing "Assessment" program under which a convicted drinking driver must undergo screening for alcohol problems and accept a treatment assignment based on the assessment results. Typically, this involved attendance at an alcohol education school.

It was felt that the key provision of this new legislation was the mandatory suspension provision. More importantly, unlike other states with "mandatory" suspension, this provision applied to 100% of convicted drivers. An analysis of court activity conducted by the State showed that 45% of OWI convicted drivers lost their license during 1981 (the last full year under the old law) as compared with 100% during 1983 (the first full year under the new law). The 100% figure was achieved because any failure to suspend a license was "corrected" by the Wisconsin Bureau of Driver Licensing.

### C. Public Information Campaign

Wisconsin implemented a public information campaign coincident with the new legislation in late 1981 and early 1982. The theme of this campaign was: "Wisconsin's New Law - Loaded With Sobering Consequences." anecdotal evidence suggests that this campaign was quite effective in alerting motorists to the fact that there was new legislation and that the state was cracking down on drinking and driving. However, this campaign dealt with all elements of the new law and not just the mandatory suspension provision.

A telephone survey conducted in Milwaukee in late 1984, and later confirmed with a paper and pencil survey, indicated that most Milwaukee motorists were not aware of the fact that every person convicted of drinking and driving would lose their license for at least three months and probably six months. This provided an opportunity to conduct an information campaign designed to heighten awareness of this provision of the law and measure the effects of increased awareness on general deterrence.

The campaign was conducted in cooperation with the Milwaukee Mothers Against Drunk Driving and under the auspices of the Milwaukee Safety Commission. Some of the campaign materials were distributed prior to the Christmas season in 1984. However, the full campaign was not begun until January, 1985 and ran until June, 1985. The theme of the campaign was that loss of license is "Guaranteed" following a drinking and driving conviction.

The "Guaranteed" message was distributed using virtually all available media channels. Local spokespersons including the Chief of Police, a basketball star and a judge appeared in television spots and in radio spots. Posters were distributed to public buildings and to local employers and 100 billboards displayed the message from about February to May. The first billboard was unveiled by the Mayor at a press conference and both print and electronic news coverage was obtained.

The progress of the campaign in terms of driver knowledge and attitudes was evaluated by means of a paper and pencil survey conducted at the photo licensing stations in the greater Milwaukee area. Every motorist applying for a

photo license or license renewal was asked to complete a survey while waiting for the photo to be developed and the license to be processed. Surveys were conducted for one week per month from November, 1984 (baseline) through June, 1985. Surveys were also conducted at the Green Bay licensing station for comparison with Milwaukee. The results, shown in Tables 1-4 in the next section, indicated that the campaign was effective in reaching motorists with the "Guaranteed" message. It was also found that motorists perceived higher enforcement and conviction rates for drinking and driving as the campaign progressed though no change in either enforcement or convictions was seen in police or court records covering the 1984-1985 period.

#### D. Crash Data

The primary measure of general deterrence in the 1985 study was crash data provided by the Wisconsin Department of Transportation. General deterrence was assessed statewide for the "new" 1982 law and in Milwaukee for the 1985 media campaign. Crashes were tabulated statewide and in Milwaukee County on a month by month basis and separated into an "alcohol" and "non-alcohol" series. This separation was accomplished using prior research which had shown a high incidence of alcohol involvement in crashes having certain characteristics. The alcohol characteristics were: night, weekends, single vehicle and injury producing crashes which involved a male driver.

Time series analysis of the alcohol series indicated a drop in the number of statewide "alcohol" crashes beginning in January, 1982 which was several months after the law was passed, several months before the law was implemented and coincident with the statewide media campaign. A similar drop was seen in Milwaukee beginning in the Fall of 1981. Both the statewide and the Milwaukee reductions were step functions in that the number of alcohol crashes dropped to some new lower level and stayed at that level through the end of the series (December, 1985). There was also evidence for the effectiveness of the 1985 Milwaukee media campaign though these results were not conclusive. These earlier analyses covered the years 1977 through 1985. Section IV of this report repeats these analyses, both statewide and for Milwaukee, with the inclusion of 1986 data.

#### E. Recidivism Analysis

The primary measure of specific deterrence in the 1985 study was the subsequent driving records of individuals convicted of OWI under the old law versus those convicted under the new law implemented on May 1, 1982. The results, based on 12 month subsequent driving records, showed substantial reductions in:

- o OWI convictions
- o Crash involvements (injury and property damage)
- o Non-alcohol moving traffic violations

These reductions were most apparent during the first three months following conviction when all of the drivers convicted under the new law would have had their licenses suspended.

The original study, however, was only able to track driving records for 12 months following conviction. Section V of this report extends these analysis out to 24 months for drivers convicted under the new law and 18 months for a new versus old law comparison.

This completes a summary of the 1985 study and the background for the currently reported effort. Succeeding sections report the results for the follow up data collection. These cover another Milwaukee survey, crash data for 1986 and an extension of the recidivism analysis.

### III. SURVEY RESULTS

A public service program was conducted in Milwaukee during the months of January to June of 1985. The extent to which this program reached Milwaukee drivers, changed their knowledge concerning Wisconsin drinking and driving law and influenced their drinking and driving attitudes was evaluated by means of a locally conducted survey of motorists. The first set or "wave" of survey data was collected before the program began (baseline - November, 1984) and was repeated every month through June of 1985.

The paragraphs which follow present the data from a follow-up survey, using the same procedures as the earlier work, conducted in March, 1988. The objective of the follow-up was to determine if there was any residual effect of the program three years after the campaign.

#### A. Method

As in the earlier work (Contract No. DTNH22-83-C-07014), the survey was conducted by The Milwaukee Safety Commission in cooperation with the Milwaukee Mothers Against Drunk Driving and the Wisconsin Department of Transportation. The survey was a one page paper and pencil instrument administered at the photo licensing stations of the Wisconsin D.O.T. Individuals applying for a license or a license renewal must wait for their photo to be processed. This waiting time is routinely used by D.O.T. for surveys of this type. Milwaukee County has five such photo licensing stations all of which participated in both the earlier study and the current follow-up. Surveys were also conducted at the Green Bay photo licensing station which was used as a comparison location to Milwaukee for a total of six participating stations.

Surveys were conducted during the second full week in March, 1988. All drivers visiting any one of the six participating stations for the purpose of getting a license were to be asked to complete a survey while their photo was being processed. All surveys were completed anonymously and were not a condition for obtaining a license. The available time that each driver had for the survey was obviously quite limited and thus the survey was limited to one page. However, in order to cover the many items of interest, five survey forms were developed for use in the earlier study. The forms were collated such that the first driver got form A, the second form B etc.

Each survey consisted of a set of "core" questions contained on every survey form plus additional questions unique to each survey form. The core questions covered:

- o driver sex, age and zip code of residence
- o reason for visiting the licensing station
- o perceived "unpleasantness" of the consequences if convicted of OWI
- o perceived influence of knowledge of certain loss of license on personal decisions to drink and drive

In addition, all but one of the survey forms asked:

- o "What percent of drivers convicted of drunk driving for the first time in Wisconsin actually lose their licenses?"

This question was not asked on the one survey form that contained an open ended or unaided question about the penalties for first OWI conviction since it was felt that this question could bias the open ended responses.

The five survey forms were shown in the earlier report. The first survey form, "exposure," was designed to measure how many people had seen the media materials. It asked questions concerning exposure to the television, radio and print items. The second form, "aided knowledge," listed several possible penalties for first OWI conviction and asked the driver to indicate which would and which would not apply in Wisconsin. The third form, "unaided knowledge," simply asked what the penalties would be without providing any cues and possible responses. The fourth form, "attitudes," asked drivers to agree or disagree with six highway safety related statements. The fifth form dealt with questions concerning occupational licensing. This form was used by Wisconsin during 1985 and was not included in the 1988 follow-up.

The earlier study covered eight survey waves from November, 1984 to June, 1985. The number of responding Milwaukee drivers across these eight waves ranged from a low of 879 to a high of 1,690. A total of 1,351 Milwaukee drivers completed the survey during the March, 1988 follow-up. In Green Bay, the number of responding drivers ranged from 208 to 587 in the earlier study. There were 256 responding drivers in the follow-up.

An analysis of zip codes showed that drivers living in the County of Milwaukee accounted for 84% of the sample in the earlier study as compared with 77% for the follow-up. However, for both the earlier study and the follow-up, 99% of the sample resided within the Milwaukee Standard Metropolitan Statistical Area. Similarly, 98% and 99% of the Green Bay sample resided within the Green Bay Standard Metropolitan Statistical Area for the earlier study and the follow-up respectively. The median age of the Milwaukee drivers was 36.6 years for the follow-up as compared with 36.0 years in the earlier study. Males accounted for 49% of the Milwaukee follow-up sample as compared with 52% in the earlier study.

## B. Survey Results

The media campaign consisted of television spots, radio spots and printed materials, including billboards, posters and press releases. Survey respondents were asked three separate "Yes-No" questions covering each of the three media forms. The three questions were identical in form and differed only with respect to the media that was being addressed. The TV question read as follows:

"Have you seen any TV commercials in the last month which talked about: Convicted drunk drivers guaranteed to lose their licenses?"

The results for this question across the eight survey waves from the earlier study and for the follow-up are shown in Table 1. These results indicate that 49% of the Milwaukee follow-up sample responded affirmatively. This figure is well above the Milwaukee baseline (32% in November, 1984) yet well below the peak of the earlier campaign in the spring of 1985. Similarly, the results for radio exposure and print exposure, also shown in Table 1, indicate that the

Table 1.

Exposure to Media Materials  
November '84 - June '85 and March '88

|                            | Percentage of Respondents Who Recalled<br>Guaranteed Loss of License Message |      |       |      |       |      | Number of<br>Respondents |      |
|----------------------------|--|------|-------|------|-------|------|--------------------------|------|
|                            | T.V.   |      | Radio |      | Print |      | Milw.                    | G.B. |
|                            | Milw.*   | G.B. | Milw. | G.B. | Milw. | G.B. |                          |      |
| November '84<br>(baseline) | 32%  | 28%  | 24%   | 25%  | 37%   | 39%  | 339                      | 117  |
| December                   | 39%  | 31%  | 32%   | 31%  | 38%   | 30%  | 272                      | 91   |
| January                    | 48%  | 43%  | 41%   | 39%  | 44%   | 48%  | 273                      | 95   |
| February                   | 64%  | 31%  | 49%   | 35%  | 58%   | 40%  | 295                      | 55   |
| March                      | 59%  | 41%  | 46%   | 27%  | 59%   | 46%  | 206                      | 41   |
| April                      | 67%  | 25%  | 52%   | 21%  | 65%   | 34%  | 218                      | 80   |
| May                        | 72%  | 35%  | 57%   | 28%  | 65%   | 50%  | 191                      | 78   |
| June '85                   | 67%  | 29%  | 47%   | 23%  | 65%   | 33%  | 172                      | 123  |
| March '88                  | 49%  | 33%  | 38%   | 27%  | 48%   | 40%  | 315                      | 58   |

\*Milw. = Milwaukee; G.B. = Green Bay

follow-up was well above baseline yet well below the peak of the campaign. The comparable results for Green Bay show no particular pattern.

These results suggest that there are still lingering effects of the Milwaukee media campaign. Drivers were not as likely to report exposure in the follow-up as they were in 1985. Nevertheless, there is clearly some remembrance of the theme of the earlier program.

Whether or not drivers remember the earlier program, they may still remember that 100% of convicted drinking drivers will lose their license. In other words, they may still exhibit a "knowledge gain" as compared to baseline and it is this knowledge gain that was the primary objective of the media program. Three of the survey questions were devoted to measuring this objective. The first question, asked on three of the four survey forms, read as follows:

"What percent of drivers convicted of drunk driving for the first time in Wisconsin actually lose their licenses?"

Respondents were asked to guess if they were not sure and response categories ranging from 0% to 100% were provided. The correct answer is 100%. The results for this "knowledge" question may be seen in Table 2. As with the exposure data, the follow-up results are well above baseline (22% correct versus 10% correct in November, 1984) yet well below the peak of the campaign in the spring of 1985.

Two other survey questions were designed to measure the same knowledge as covered above. One of these may be thought of as "unaided recall" and read as follows:

"What penalties, if any, does Wisconsin require for everyone convicted of drunk driving for the first time?"

The second of these questions may be thought of as "aided recall." This last question read as follows:

"What penalties does Wisconsin law require for a first drunk driving conviction? (Please check all that you think apply)"

This question was followed by seven possible penalties one of which was "Lose license." The results for both the aided and unaided recall questions are also shown in Table 2. They indicate a knowledge of the law among Milwaukee motorists during the follow-up survey which is well above baseline and well below the peak of the 1985 campaign.

The comparable results for Green Bay are also shown in Table 2. These results for the first question, "what percent", show no particular pattern either across the earlier study or the follow-up. The results for aided and unaided recall, however, suggest an increase in knowledge of the law. Nevertheless, it should be noted that the aided and unaided questions were each contained on only one of the survey forms and thus the number of responding drivers in Green Bay for each of these questions is particularly low. Therefore, the Green Bay results with respect to these two questions should be interpreted with some caution.

Table 2.

Knowledge of Loss of License  
November '84 - June '85 and March '88

|                            |        | <u>Exact Knowledge</u>  |             | <u>Unaided Recall</u>  |             | <u>Aided Recall</u>   |             |
|----------------------------|--------|---|-------------|--|-------------|---|-------------|
|                            |        | Responded 100% to:<br>What percent lose<br>license on first OWI<br>conviction |             | Responded lose<br>license to: What<br>penalties are<br>required upon first<br>OWI conviction |             | Checked lose<br>license in list of<br>possible penalties<br>for first OWI<br>Conviction |             |
|                            |        | <u>Milw.*</u>   | <u>G.B.</u> | <u>Milw.</u>   | <u>G.B.</u> | <u>Milw.</u>  | <u>G.B.</u> |
| November '84<br>(baseline) | %<br>N | 10%<br>1358   | 14%<br>468  | 48%<br>332   | 49%<br>119  | 58%<br>301  | 50%<br>110  |
| December                   | %<br>N | 11%<br>1081   | 15%<br>362  | 57%<br>274   | 46%<br>89   | 66%<br>270  | 64%<br>92   |
| January                    | %<br>N | 18%<br>1112   | 20%<br>372  | 60%<br>272   | 57%<br>95   | 69%<br>238  | 60%<br>95   |
| February                   | %<br>N | 22%<br>1176   | 14%<br>217  | 70%<br>289   | 49%<br>55   | 73%<br>293  | 77%<br>56   |
| March                      | %<br>N | 26%<br>821  | 15%<br>165  | 73%<br>195   | 47%<br>43   | 76%<br>205  | 60%<br>40   |
| April                      | %<br>N | 30%<br>880  | 17%<br>320  | 69%<br>216   | 50%<br>80   | 82%<br>219  | 66%<br>79   |
| May                        | %<br>N | 30%<br>776  | 14%<br>303  | 75%<br>183   | 34%<br>74   | 82%<br>198  | 66%<br>77   |
| June '85                   | %<br>N | 31%<br>711  | 17%<br>487  | 69%<br>168   | 41%<br>123  | 81%<br>181  | 62%<br>120  |
| March '88                  | %<br>N | 22%<br>1,008  | 17%<br>191  | 65%<br>333   | 61%<br>64   | 77%<br>341  | 73%<br>63   |

\*Milw. = Milwaukee; G.B. = Green Bay

Five of the survey questions dealt with driver attitudes concerning drinking and driving. The earlier study found strong feelings against this behavior with little or no change from the baseline to the peak of the campaign. The present follow-up data, taken three years after the campaign, indicated even stronger feelings with respect to each of these items. It is felt that these stronger feelings probably reflect a general trend in the population at large and should not be attributed to the campaign. The five items, the overall percentage from the earlier study and the percentage in the follow-up are shown below:

"If you were convicted of a drunk driving first offense, how unpleasant would the consequences be?"

- o 1985 study - 88% of Milwaukee drivers thought that the consequences would be extremely or very unpleasant
- o Follow-up - 93%

"How much do these consequences influence whether or not you drive while you are in violation of the OWI (drunk driving) law?"

- o 1985 study - 72% of Milwaukee drivers responded "very much"
- o Follow-up - 76%

"The penalties for drunk driving should be more severe."

- o 1985 study - 82% of Milwaukee drivers agreed
- o Follow-up - 89%

"People are less likely to drive when drunk than they were a year ago."

- o 1985 study - 68% of Milwaukee drivers agreed
- o Follow-up - 72%

"Drunk drivers should lose their license for at least 90 days."

- o 1985 study - 84% of Milwaukee drivers agreed
- o Follow-up - 85%

The 1985 media campaign focused on loss of license following a drinking and driving conviction. It did not talk about increased enforcement, more arrests or a higher conviction rate following arrest. In fact, during the period of the campaign, the number of arrests and the number of convictions remained relatively stable. Nevertheless, as the campaign progressed, drivers perceived that more arrests were being made and that the conviction rate was increasing. The two questions dealing with these issues were as follows:

"On a typical night, what percent of the people who drive in violation of the OWI (drunk driving) law are arrested?"

"What percent of drivers arrested for violating the OWI law are actually convicted?"

Table 3 shows the results from the earlier study and from the follow-up. These results parallel the findings for exposure and knowledge reported above in that the follow-up was higher than the Milwaukee baseline yet less than the peak of the program. Table 3 also shows the results for Green Bay though again, these results should be interpreted with caution given the small sample sizes in the Green Bay follow-up.

Table 3.

Perceived Probability of Arrest and Conviction  
November '84 - June '85 and March '88

|                            | <u>Arrest</u>  |             | <u>Conviction</u>   |             | Number<br>of<br>Respondents |             |
|----------------------------|--|-------------|---|-------------|-----------------------------|-------------|
|                            | Responded 40%<br>or more to:<br>What percent of<br>drunk drivers<br>are arrested |             | Responded 60%<br>or more to:<br>What percent of<br>arrested drunk<br>drivers are<br>convicted |             |                             |             |
|                            | <u>Milw.*</u>  | <u>G.B.</u> | <u>Milw.</u>  | <u>G.B.</u> | <u>Milw.</u>                | <u>G.B.</u> |
| November '84<br>(baseline) | 8%   | 12%         | 23%   | 29%         | 301                         | 110         |
| December                   | 13%  | 17%         | 24%   | 34%         | 270                         | 92          |
| January                    | 12%  | 12%         | 24%   | 26%         | 238                         | 95          |
| February                   | 18%  | 12%         | 33%   | 39%         | 293                         | 56          |
| March                      | 22%  | 12%         | 33%   | 25%         | 205                         | 40          |
| April                      | 20%  | 15%         | 40%   | 30%         | 219                         | 79          |
| May                        | 19%  | 16%         | 41%   | 35%         | 198                         | 77          |
| June '85                   | 17%  | 10%         | 36%   | 27%         | 181                         | 120         |
| March '88                  | 13%  | 13%         | 31%   | 37%         | 341                         | 63          |

\*Milw. = Milwaukee; G.B. = Green Bay

Lastly, the survey contained some questions dealing with self-reported drinking and driving behavior. The earlier study suggested little or no change with respect to these questions as the media program progressed. These results could have meant that no change actually occurred or that it is difficult to get valid responses to these types of questions within the confines of the licensing station. Table 4 adds the follow-up data to the earlier reported results. As before, there appears to be no obvious pattern and the Green Bay findings should be interpreted with caution given the low sample sizes.

In summary, it is felt that the follow-up survey provides a clear pattern of results. Three years after the campaign, Milwaukee drivers still remember exposure to the "loss of license" media materials and still retain some knowledge of the fact that loss of license is required under Wisconsin law for a drinking and driving conviction. They also perceive that more drivers are being arrested and convicted of drinking and driving than was the case from before the program. Each of these results are well below the peak of the campaign during the spring of 1985 yet well above the 1984 baseline. It is also felt that the attitudinal results suggest a general trend from strong attitudes against drinking and driving in 1985 to even stronger attitudes against drinking and driving in 1988.

Table 4.

Self-Reported Violations of DWI Law  
November '84 - June '85 and March '88

|                            | Responded once<br>a month or more<br>to: How often<br>drive in violation<br>of DWI law |             | Responded always<br>or usually to:<br>How often drive self<br>home after drinking |             | Number<br>of<br>Respondents |             |
|----------------------------|--|-------------|---|-------------|-----------------------------|-------------|
|                            | <u>Milw.*</u>  | <u>G.B.</u> | <u>Milw.</u>  | <u>G.B.</u> | <u>Milw.</u>                | <u>G.B.</u> |
| November '84<br>(baseline) | 20%  | 30%         | 10%   | 19%         | 332                         | 119         |
| December                   | 20%  | 29%         | 12%   | 16%         | 274                         | 89          |
| January                    | 18%  | 32%         | 11%   | 21%         | 272                         | 95          |
| February                   | 18%  | 33%         | 13%   | 20%         | 289                         | 55          |
| March                      | 24%  | 37%         | 15%   | 12%         | 195                         | 43          |
| April                      | 21%  | 35%         | 12%   | 20%         | 216                         | 80          |
| May                        | 20%  | 20%         | 9%  | 12%         | 183                         | 74          |
| June '85                   | 28%  | 33%         | 17%   | 15%         | 168                         | 123         |
| March '88                  | 21%  | 11%         | 11%   | 3%          | 325                         | 63          |

\*Milw. = Milwaukee; G.B. = Green Bay

#### IV. CRASH DATA ANALYSIS

The ultimate objective of the 1982 Wisconsin drinking and driving legislation and of the January to June of 1985 media program in Milwaukee was to reduce death and injury resulting from alcohol related crashes. The results, presented in the earlier report, indicated that the 1982 law was associated with a sharp decline in alcohol related crashes. Also, the 1985 media program may have contributed to a further decline in Milwaukee beyond the drop experienced in 1982. However, this additional decline was smaller than the 1982 effect and the statistical evidence was not conclusive.

The present follow-up study adds 1986 crash data to the 1977-85 data that were available in the earlier study. Analysis of this expanded data set used the same approach as was used before and, as the paragraphs below indicate, arrived at essentially the same conclusions.

##### A. Approach

Crash data are archived by the Wisconsin Department of Transportation on computer tape on a yearly basis. Tapes were available to the earlier study for the years 1977 to 1985. These tapes were processed to develop a single record for each crash regardless of the number of vehicles involved in the crash. The processed data, excluding crashes for which the time of the event was unknown, were then tabulated on a monthly basis. These processing steps were repeated for the 1986 data and the results were appended to the already available file. The result was one data set covering 120 months from 1977 through 1986.

As discussed in detail in the earlier report, the primary analysis technique utilized was Box-Jenkins time series analysis. Time series analysis can account for seasonal cycles, underlying trends and other potentially confounding factors. It also permits the use of comparison or covariate series and can be used to identify countermeasure intervention points as well as the type or form of the intervention.

Obviously, the major focus of the analyses was on crashes involving alcohol. The hypothesis being tested was that alcohol involved crashes declined statewide as a result of the 1982 law and that alcohol involved crashes in Milwaukee showed an additional decline in response to the 1985 media program. Unfortunately, for most crashes, it is not possible to know with certainty whether or not one or more of the drivers had been drinking. Therefore, it was necessary to develop a "surrogate" measure or series representing alcohol involvement.

This surrogate measure or "alcohol series" was defined as the monthly tabulation of all crashes having the following characteristics:

- o single vehicle
- o injury or fatal
- o with a male driver
- o occurring between 10 P.M. and 4:59 A.M.
- o on Thursday, Friday or Saturday night

Previous research had shown that each of these crash characteristics are associated with alcohol involvement and that when all of these characteristics are present there is a high probability that the driver had been drinking.

Once the alcohol series had been defined, it was necessary to develop a comparison series of non-alcohol crashes. The purpose of this comparison was to control for any overall crash reporting changes or global trends which might account for any of the observed changes in the alcohol series. This "non-alcohol series" was defined as all crashes excluding single vehicle injury or fatal events occurring between 10 P.M. and 4:59 A.M. This non-alcohol series is presumed to contain a low number of alcohol related events since all late night single vehicle injuries are excluded while daylight property damage (only) crashes are the largest single category.

Alcohol and non-alcohol series were constructed for the statewide data and for Milwaukee County. Each series contained 120 data points representing the respective monthly crash tabulations for the period 1977 through 1986. The analyses of these series are described below.

#### B. Statewide Results

Table 5 and Figure 1 show the Wisconsin statewide alcohol series. The results indicate that there were 3,696 of these "alcohol" crashes during 1977 increasing to more than 4,000 in 1980 and 1981. In 1982, the number dropped to 2,990 and remained at approximately this level through the end of 1985. In 1986, the one year added to this Table beyond the earlier report, the number was 2,525 which was similar to the 1985 figure (2,560) and indicates that the number of these crashes have remained low for yet another year following the 1982 law.

Analysis of the 1977-85 data in the earlier report indicated a statistically significant "step intervention" in this series beginning in January, 1982. This date is several months after passage of the law (summer, 1981), several months prior to implementation (May, 1982) and coincident with a statewide public information campaign announcing the law. This intervention is referred to as a "step" since alcohol crashes "stepped" down to some new lower level in January of 1982 and remained at this new lower level until the end of the series. The top portion of Table 6 shows a repeat of this analysis including the 1986 data. As before, a statistically significant step intervention was found beginning in January of 1982 and crashes remained at this new lower level until the end of the series which is now December, 1986. The size of the reduction in this new analysis is 104 crashes per month (a 30% reduction) as compared with 117 crashes as found in the earlier report.

Table 5 also shows the statewide non-alcohol or comparison series. This series was considered as a measure of the total traffic environment in Wisconsin including any changes in crash reporting practice or requirements. This comparison series along with the step intervention identified above were used as covariates in a second time series analysis. The resulting time series model, shown in the lower portion of Table 6, indicated that the step intervention was again statistically significant and was associated with a reduction of 74 crashes per month (a 22% reduction) as compared with 108 crashes as found in the earlier report.

Table 5.

Wisconsin Accident Distributions

Alcohol Series

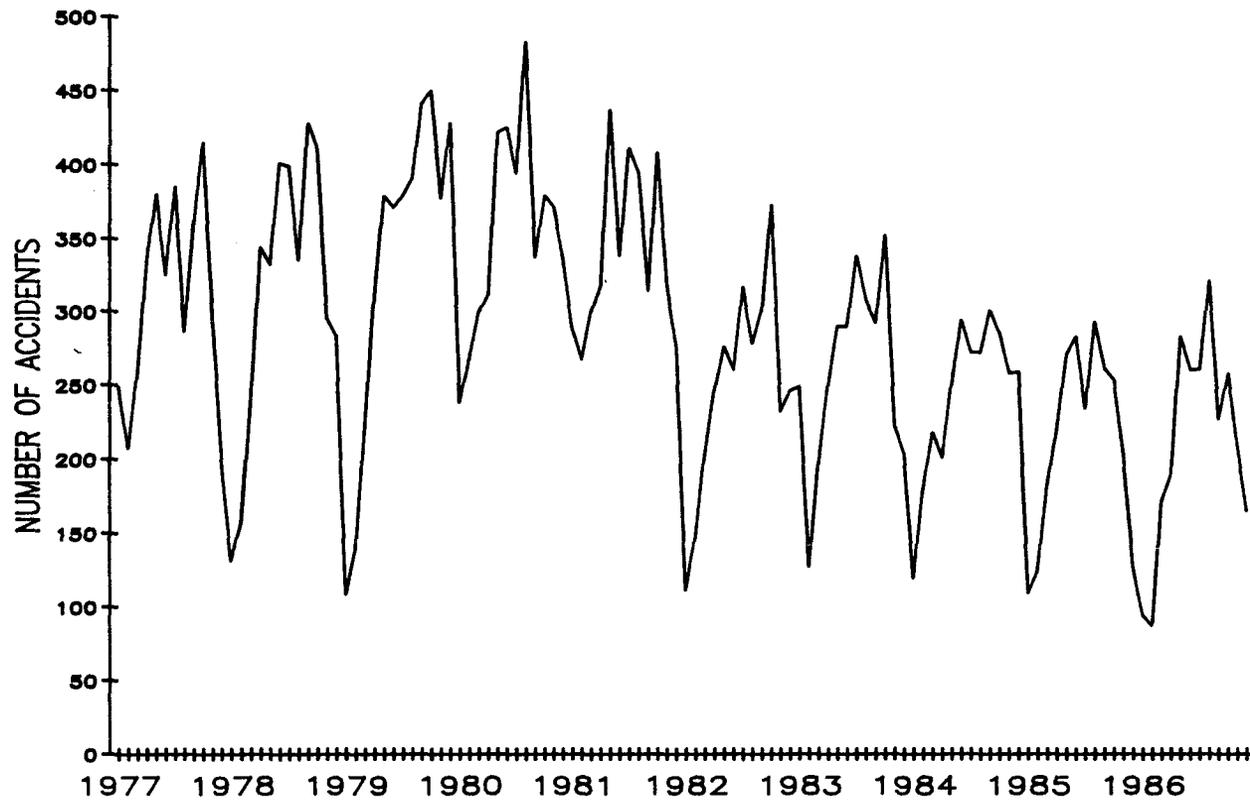
|      | J   | F   | M   | A   | M   | J   | J   | A   | S   | O   | N   | D   | Total |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| 1977 | 249 | 207 | 259 | 335 | 380 | 325 | 385 | 286 | 360 | 415 | 297 | 198 | 3,696 |
| 1978 | 131 | 157 | 239 | 344 | 332 | 401 | 399 | 335 | 428 | 410 | 295 | 283 | 3,754 |
| 1979 | 108 | 139 | 221 | 309 | 379 | 371 | 379 | 391 | 441 | 450 | 377 | 428 | 3,993 |
| 1980 | 238 | 268 | 299 | 312 | 422 | 425 | 394 | 483 | 337 | 379 | 371 | 336 | 4,264 |
| 1981 | 288 | 267 | 299 | 318 | 437 | 338 | 411 | 394 | 314 | 408 | 318 | 276 | 4,068 |
| 1982 | 111 | 147 | 203 | 246 | 276 | 260 | 317 | 278 | 301 | 373 | 232 | 246 | 2,990 |
| 1983 | 249 | 127 | 197 | 250 | 290 | 290 | 338 | 307 | 292 | 352 | 222 | 203 | 3,117 |
| 1984 | 119 | 179 | 218 | 201 | 252 | 294 | 272 | 272 | 301 | 285 | 258 | 259 | 2,910 |
| 1985 | 109 | 124 | 182 | 220 | 271 | 283 | 234 | 293 | 261 | 253 | 203 | 127 | 2,560 |
| 1986 | 94  | 87  | 172 | 189 | 283 | 260 | 261 | 321 | 227 | 258 | 208 | 165 | 2,525 |

All Accident Series

Non-Alcohol Series

|      | J      | F      | M      | A      | M      | J      | J      | A      | S      | O      | N      | D      | Total   |
|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| 1977 | 18,429 | 10,793 | 11,207 | 10,942 | 11,711 | 11,767 | 11,682 | 12,484 | 12,730 | 14,092 | 17,148 | 18,648 | 161,633 |
| 1978 | 17,103 | 14,436 | 11,599 | 10,715 | 12,758 | 13,418 | 13,506 | 12,672 | 12,817 | 14,165 | 17,650 | 20,236 | 171,075 |
| 1979 | 27,979 | 19,716 | 14,876 | 11,880 | 12,457 | 13,279 | 12,503 | 12,862 | 12,297 | 14,800 | 16,389 | 14,249 | 183,287 |
| 1980 | 12,505 | 10,656 | 10,778 | 9,166  | 9,939  | 9,998  | 10,288 | 10,696 | 10,090 | 11,161 | 12,042 | 15,283 | 132,602 |
| 1981 | 9,930  | 11,678 | 7,840  | 8,844  | 10,187 | 10,521 | 10,212 | 10,023 | 9,279  | 11,323 | 11,075 | 12,607 | 123,519 |
| 1982 | 15,539 | 10,104 | 8,443  | 8,824  | 8,359  | 8,482  | 8,494  | 8,126  | 8,335  | 9,747  | 11,785 | 10,536 | 116,564 |
| 1983 | 9,888  | 8,446  | 9,315  | 7,422  | 9,248  | 9,438  | 9,048  | 9,031  | 9,793  | 10,982 | 12,399 | 15,884 | 120,894 |
| 1984 | 10,497 | 7,547  | 10,225 | 8,527  | 9,810  | 10,647 | 9,926  | 9,507  | 10,035 | 12,057 | 12,764 | 15,436 | 126,978 |
| 1985 | 14,220 | 11,459 | 9,116  | 8,827  | 9,926  | 9,945  | 10,394 | 10,073 | 9,932  | 12,483 | 16,389 | 16,601 | 139,365 |
| 1986 | 12,110 | 11,083 | 8,619  | 8,464  | 10,761 | 10,886 | 11,216 | 10,941 | 11,242 | 12,662 | 14,254 | 13,047 | 135,285 |

Figure 1  
"ALCOHOL" MONTHLY ACCIDENT SERIES\*  
STATEWIDE IN WISCONSIN



\*Single vehicle accidents, male driver, 10 pm - 4:59 am Thurs/Fri/Sat

Table 6.

## Models for Wisconsin Alcohol Series

Multivariate Model -- Alcohol Series  
(scaled by /100)

| <u>Parameter #</u> | <u>Description</u>                                    | <u>Factor</u> | <u>Lag</u> | <u>Coefficient</u> | <u>T ratio</u> |
|--------------------|---|---------------|------------|--------------------|----------------|
| 1                  | Mean  |               |            | 3.33               |                |
| 2                  | Autoregressive  | 1             | 1          | .36                | 4.05           |
| 3                  | Autoregressive  | 1             | 12         | .75                | 12.25          |
| 4                  | Moving Average  | 1             | 3          | -.23               | -2.57          |
| 5                  | Step Intervention<br>(0 to month 60,<br>1 thereafter) | 1             | 0          | -1.04              | -4.50          |

Equation: 
$$Y_t = -1.04I_t + \frac{3.33 + (1+.23B^3)a_t}{(1-.36B)(1-.75B^{12})}$$

Multivariate Model -- Alcohol Series with Covariates for Step Intervention  
and Wisconsin Non-Alcohol Series  
(scaled by /100)  
(differencing, noise model: 12,1 and 1,1)

| <u>Parameter #</u> | <u>Description</u>                                    | <u>Factor</u> | <u>Lag</u> | <u>Coefficient</u> | <u>T ratio</u> |
|--------------------|---|---------------|------------|--------------------|----------------|
| 1                  | Moving Average  | 1             | 1          | .83                | 13.86          |
| 2                  | Moving Average  | 2             | 12         | .94                | 49.68          |
| 3                  | Step Intervention<br>(0 to month 60,<br>1 thereafter) | 1             | 0          | -.74               | -2.93          |
| 4                  | Non-Alcohol Series (/1,000)<br>Input Lag              | 1             | 0          | -.86               | -4.28          |

Equation: 
$$Y_t = -.86X_t - .74I_t + \frac{(1-.83B)(1-.94B^{12})a_t}{(1-B)(1-B^{12})}$$

Note: Notation shown on Table 8

Taken together, these results suggest that the 1982 law was associated with a reduction in alcohol related crashes. This reduction began in January of 1982 and has apparently remained at least through December of 1986. The size of this reduction in the alcohol series, as estimated in this report and in the earlier report, is approximately 20% to 30%.

### C. Milwaukee Results

Table 7 and Figure 2 show the alcohol series for Milwaukee. As shown in Table 7, the number of alcohol crashes was relatively stable in the mid 400's for the years 1977 to 1981 and then dropped to the mid 300's for the years 1982 to 1984. In 1985, the number of these events was 333 and the monthly figures for the first half of 1985, the period of the media program, appear particularly low. The figure for 1986, added as part of this follow up study, was 303. However, the 1985-86 drop in the number of these crashes would not appear to be as large as the drop seen in 1982 when the law was implemented.

As discussed in the earlier report (1977 to 1985 data) time series analysis of the alcohol series with automatic intervention detection indicated that the effect of the 1982 law began in Milwaukee in August of 1981 (-9.75 crashes per month) which was coincident with the law's passage. Analyses done for the purpose of this report (including 1986 data) indicated that the effect began in January of 1982 (-9.25 crashes per month) which is consistent with the statewide analyses both in terms of onset and magnitude.

However, the primary purpose for looking at the Milwaukee results was to examine the effects of the 1985 media program and not the statewide crash reduction in 1982. The earlier report discussed a variety of analyses that were used to try to identify a statistically significant effect associated with this program. All of these analyses suggested that crashes were reduced during the time period that the program was operating. However, some of these analyses were statistically significant and some were not. It was concluded that the program may have reduced alcohol crashes but the effect was small, about five crashes per month, and could not be demonstrated conclusively or consistently across the many analyses performed.

Many of the earlier analyses were repeated with the inclusion of data for 1986. The results paralleled those from the earlier report. Some analyses showed a statistically significant effect, some were not statistically significant and it was again concluded that crash reduction from the 1985 media program could not be demonstrated conclusively or consistently. Table 8 shows one of the "better" time series models developed as part of these analyses. This model shows the January, 1982 reduction (-9.25 crashes) and an additional reduction of 7.56 crashes for the months of January to April of 1985 (significant one-tail only). Unfortunately, the selection of the January to April period is largely arbitrary, and thus this result must be viewed as inconclusive.

In summary, the Milwaukee data indicate a reduction in crashes associated with the 1982 law. This reduction is consistent both in onset and magnitude with the statewide results. The 1985 media program in Milwaukee may have reduced crashes even further beyond the 1982 effect. However, any reduction associated with the media program is probably quite small, did not likely last beyond the period of the program and could not be demonstrated consistently across the many analyses performed.

Table 7.

## Milwaukee Accident Distributions

## Alcohol Series

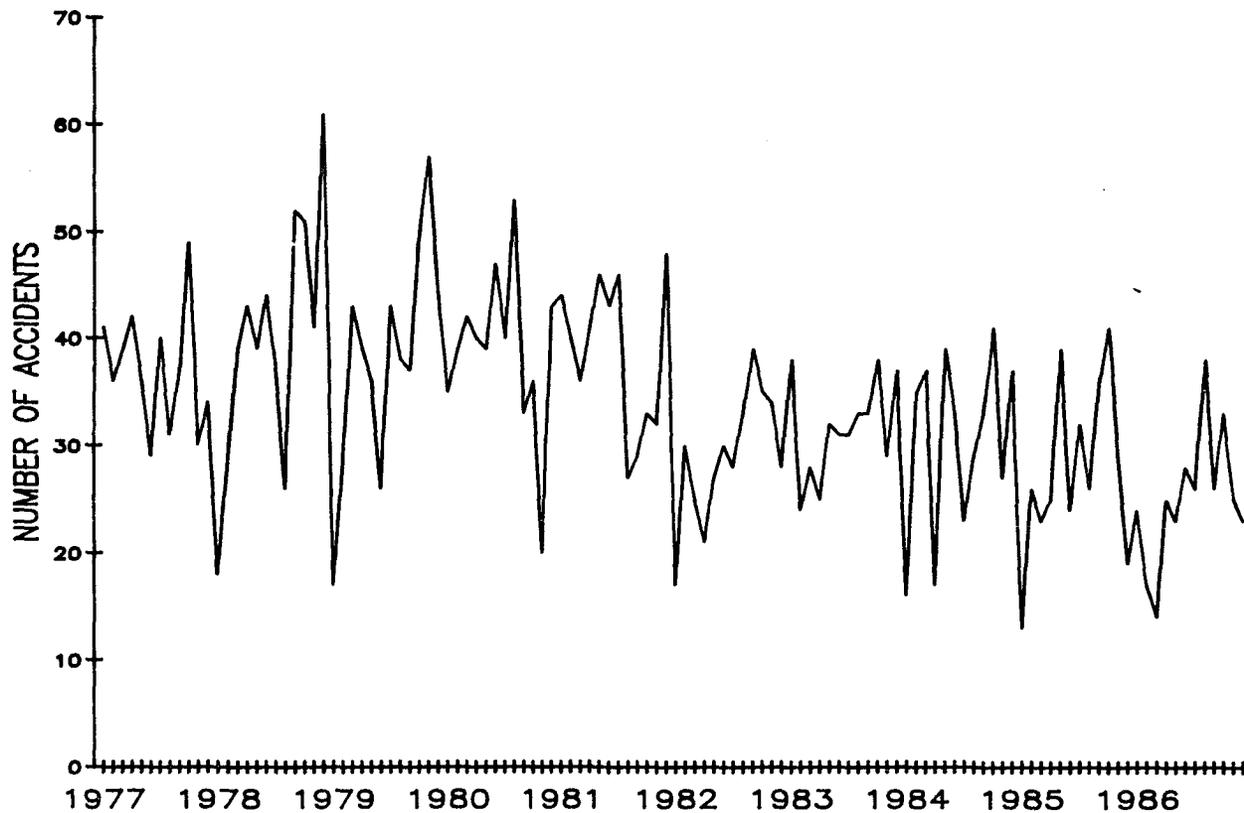
|      | J  | F  | M  | A  | M  | J  | J  | A  | S  | O  | N  | D  | Total |
|------|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| 1977 | 41 | 36 | 39 | 42 | 36 | 29 | 40 | 31 | 37 | 49 | 30 | 34 | 444   |
| 1978 | 18 | 28 | 39 | 43 | 39 | 44 | 37 | 26 | 52 | 51 | 41 | 61 | 479   |
| 1979 | 17 | 28 | 43 | 39 | 36 | 26 | 43 | 38 | 37 | 50 | 57 | 44 | 458   |
| 1980 | 35 | 39 | 42 | 40 | 39 | 47 | 40 | 53 | 33 | 36 | 20 | 43 | 467   |
| 1981 | 44 | 40 | 36 | 41 | 46 | 43 | 46 | 27 | 29 | 33 | 32 | 48 | 465   |
| 1982 | 17 | 30 | 25 | 21 | 27 | 30 | 28 | 33 | 39 | 35 | 34 | 28 | 347   |
| 1983 | 38 | 24 | 28 | 25 | 32 | 31 | 31 | 33 | 33 | 38 | 29 | 37 | 379   |
| 1984 | 16 | 35 | 37 | 17 | 39 | 33 | 23 | 29 | 33 | 41 | 27 | 37 | 367   |
| 1985 | 13 | 26 | 23 | 25 | 39 | 24 | 32 | 26 | 36 | 41 | 29 | 19 | 333   |
| 1986 | 24 | 17 | 14 | 25 | 23 | 28 | 26 | 38 | 26 | 33 | 25 | 23 | 302   |

## All Accident Series

## Non-Alcohol Series

|      | J     | F     | M     | A     | M     | J     | J     | A     | S     | O     | N     | D     | Total  |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 1977 | 4,862 | 3,009 | 3,035 | 2,865 | 2,916 | 3,104 | 2,903 | 3,136 | 3,191 | 3,271 | 3,762 | 4,445 | 40,499 |
| 1978 | 4,379 | 4,114 | 3,078 | 2,705 | 3,347 | 3,385 | 3,123 | 2,996 | 3,096 | 3,369 | 3,808 | 4,964 | 42,364 |
| 1979 | 8,201 | 5,697 | 3,888 | 3,053 | 3,144 | 3,277 | 3,116 | 3,363 | 2,909 | 3,547 | 3,486 | 3,419 | 47,100 |
| 1980 | 3,366 | 3,100 | 2,971 | 2,684 | 2,698 | 2,662 | 2,702 | 2,871 | 2,725 | 2,747 | 2,727 | 3,930 | 35,183 |
| 1981 | 2,779 | 3,108 | 2,169 | 2,479 | 2,726 | 2,795 | 2,621 | 2,761 | 2,660 | 2,853 | 2,473 | 3,135 | 32,559 |
| 1982 | 4,763 | 3,439 | 2,518 | 2,538 | 2,344 | 2,319 | 2,194 | 2,266 | 2,376 | 2,480 | 2,655 | 2,721 | 32,613 |
| 1983 | 2,298 | 2,419 | 2,850 | 2,098 | 2,620 | 2,514 | 2,415 | 2,539 | 2,735 | 2,867 | 2,607 | 4,188 | 32,150 |
| 1984 | 2,833 | 2,154 | 2,969 | 2,567 | 2,722 | 2,872 | 2,501 | 2,538 | 2,616 | 3,185 | 2,637 | 4,078 | 33,672 |
| 1985 | 4,252 | 3,724 | 2,579 | 2,547 | 2,684 | 2,639 | 2,854 | 2,683 | 2,710 | 3,255 | 3,303 | 4,109 | 37,339 |
| 1986 | 3,217 | 3,233 | 2,354 | 2,519 | 3,085 | 3,159 | 3,307 | 3,098 | 3,214 | 3,246 | 2,769 | 3,072 | 36,273 |

Figure 2  
"ALCOHOL" MONTHLY ACCIDENT SERIES\*  
IN MILWAUKEE



\*Single vehicle accidents, male drivers, 10 pm - 4:59 am Thurs/Fri/Sat

Table 8.

Model for Milwaukee Alcohol Series

Multivariate Model -- Alcohol Series  
(scaled by /10)

| <u>Parameter #</u> | <u>Description</u>   | <u>Factor</u> | <u>Lag</u> | <u>Coefficient</u> | <u>T ratio</u> |
|--------------------|--|---------------|------------|--------------------|----------------|
| 1                  | Mean   |               |            | 3.86               |                |
| 2                  | Step Intervention<br>(0 to month 60,<br>1 thereafter)                            | 1             | 0          | - .92              | - 6.34         |
| 3                  | Pulse Intervention<br>(0 for months 1-96<br>and 101-120, 1 for<br>months 97-100) | 1             | 0          | - .76              | - 1.86         |

Equation:  $Y_t = -.92I_t - .76P + 3.86 + a_t$

where:

- Y = alcohol series
- X = non-alcohol series
- t = time (i.e., month)
- I = indicated intervention series
- P = pulse intervention
- B = backshift operator
- a = noise series

## V. SPECIFIC DETERRENCE ANALYSIS

Another objective of the 1982 Wisconsin drinking and driving legislation was to provide specific deterrence and rehabilitation such that convicted drinking drivers would be less likely to repeat the offense. One of the key features of this legislation was the mandatory license suspension for first time offenders. The 1982 law also increased the fine for drinking and driving; strengthened the "Assessment Program" which provides diagnosis, treatment and counseling for alcohol problems; and enabled the impounding of the vehicle of a drinking driver who was operating under suspension or revocation.

One task of the earlier study was to determine whether or not convicted drinking drivers did or did not drink and drive less often following the implementation of the 1982 law. This was accomplished by constructing four separate groups of drivers using driver records supplied by the State of Wisconsin. The first group consisted of first time offenders convicted before the 1982 law and the second group consisted of first time offenders convicted after the law. The third and fourth groups were constructed for comparison purposes and consisted of individuals convicted of a non-alcohol moving violation before and after the 1982 law. Subsequent accidents and violations were tracked for each group for a period of 12 months following their respective convictions.

The results showed a clear effect of the license suspension. Drivers convicted after the 1982 law had fewer repeat drinking and driving convictions, fewer crash involvements and fewer convictions for other moving traffic violations as compared with drivers convicted before the law. These reductions were most apparent during the first three months following conviction.

The earlier study was limited to the first twelve months following conviction. It is possible that drivers convicted under the new law may have had better driving records during this first twelve month period and worse records in later months. Therefore, one of the objectives of this follow up effort was to track the driving records of these individuals for a longer period of time. This was accomplished by requesting additional driver history information from the State of Wisconsin and appending the new data to the records obtained from the earlier study. The paragraphs below cover the data obtained from the earlier study, the additional data obtained and an analysis of driver histories beyond the first twelve months following conviction.

### A. Approach

In January, 1985, a special computer run was made against the State's driver record system to produce a driver-by-driver file of accidents, motor vehicle code convictions and related data. Specifically, for each licensed driver in the state (and for unlicensed drivers and out-of-state motorists having a Wisconsin accident or conviction), the file contained:

- o Driver date-of-birth, sex and zip code of residence

- o For each of up to 20 accidents:
  - Accident date
  - County of accident
  - Accident severity (fatal, injury, property damage only)
  
- o For each of up to 45 motor vehicle code convictions:
  - The specific charge
  - Violation date
  - Conviction date
  - County of violation

In all, records were obtained for 3,791,457 drivers. The accident data for each driver covered reported accidents that occurred from January, 1980 through late 1984. The violation records for each driver included convictions that occurred between January, 1979 and late 1984.

Four groups of drivers were then created from the master file for further analysis. These were:

**Old OWI** All drivers arrested and convicted for Operating While Intoxicated during the period May 1, 1980 to April 30, 1981 who had no other OWI conviction in the previous 12 months. This group represents those convicted under the "old" Wisconsin OWI law.

**New OWI** All drivers arrested and convicted for OWI during the period May 1, 1982 to April 30, 1983 who had no other OWI conviction in the previous 12 months. This group represents those convicted under the "new" Wisconsin law.

**Old Mov.** A sample of drivers arrested and convicted for a moving traffic violation during the May 1, 1980-April 30, 1981 period who did not have an OWI conviction in the previous 12 months.

**New Mov.** A sample of drivers arrested and convicted for a moving traffic violation during the May 1, 1982-April 30, 1983 period who did not have an OWI conviction in the previous 12 months.

Screening for entry into one of these groups was done alternately beginning with the old or new law time periods on every other record. Screening for entry into one of the OWI groups was done first. Screening for entry into the moving violation groups was done on every fifth driver record not assigned to one of the OWI groups but which did contain at least one violation conviction.

The following items of data were then determined for each driver entered into one of the groups:

- o Sex
  
- o Age on the date of conviction for the input event.

- o Number of arrests for moving violations in the 12 months prior to the arrest date of the input event.
- o Number of days from the input conviction date to various subsequent events which occurred within 12 months following the conviction. These subsequent events were fatal/injury accidents, property damage accidents, OWI arrests and moving violation arrests. When a driver had more than one subsequent event of the same type, the one nearest in time to the input conviction date was employed.

Data from these procedures were used to perform an analysis through April 30, 1984 which was twelve months after the last possible entry conviction date for the new law groups. The objective of the present study was to extend this analysis beyond the original twelve month time period. This could have been accomplished by submitting the motorist identification numbers of the new law drivers to Wisconsin and obtaining updated driver history information. However, the motorist identification number was not of interest in the earlier study and was never retained in the records. Therefore, it was necessary to repeat the above data processing steps and re-generate each of the four groups defined above. These re-generated groups did not contain exactly the same individuals as contained in the earlier study because of the random assignment processes employed. The OWI groups had virtually the same individuals while the Other Moving Groups had mostly different individuals.

The motorist identification numbers for the re-generated new law OWI group and the new law other moving group were submitted to Wisconsin and updated driver histories were obtained during March, 1988. The originally supplied data (January, 1985) were used for all recorded activity through April 30, 1984 (at least twelve months for each driver) and the newly obtained data were used for all activity after April 30, 1984.

## B. Results

Table 9 shows the composition of the four re-generated groups. These four groups are virtually identical in terms of group size, age, sex and prior convictions as compared to the earlier study. As in the earlier study, the results indicate that both alcohol groups had substantially inferior records when compared to both moving violation groups. Also, both "Old Law" groups had slightly inferior prior records when compared to their respective "New Law" groups.

Table 10 shows the results for the present study with the new law groups tracked for a total of 24 months as opposed to the 12 months covered in the earlier report. The left portion of this Table covers the first twelve months following conviction. These results indicate a marked reduction in subsequent drinking and driving, crash involvements and non-alcohol moving violations for the new law OWI group during the first three months following conviction and a smaller reduction during the next three months as compared to the old law OWI group. The amount of subsequent activity for the new law OWI group is relatively flat for the six to twelve month period. These results essentially replicate the findings from the earlier study though with a somewhat different sample of drivers.

Table 9.

Composition of Old Law and New Law Groups  
(24 month analysis)

|  | <u>First Conviction<br/>Drinking Drivers</u> |                            | <u>Convicted of Other<br/>Moving Violations</u> |                            |
|--|--|----------------------------|---|----------------------------|
|  | <u>Old Law<br/>'80-'81</u>                   | <u>New Law<br/>'82-'83</u> | <u>Old Law<br/>'80-'81</u>                      | <u>New Law<br/>'82-'83</u> |
| N =  | 19,723                                       | 19,127                     | 44,746  | 40,046                     |
| % male   | 87%  | 86%                        | 73%   | 71%                        |
| Median age (years)   | 26.3   | 26.3                       | 27.5  | 28.0                       |
| % with one or more<br>non-alcohol violations<br>in prior 12 months | 26.6%  | 22.3%                      | 13.7%   | 11.3%                      |

Table 10.

Percent of Drivers with Subsequent Events  
(24 month analysis)

| Event                     | Group    | Days to First Event |            |             |             |             |             |             |             | Total<br>1-<br>730 | Avg No.<br>of Days |
|---------------------------|----------|---------------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------------|--------------------|
|                           |          | 1-<br>90            | 91-<br>180 | 181-<br>270 | 271-<br>365 | 366-<br>455 | 456-<br>545 | 546-<br>635 | 636-<br>730 |                    |                    |
| OWI<br>Arrest             | Old OWI  | 2.0                 | 1.8        | 1.9         | 2.0         |             |             |             |             |                    |                    |
|                           | New OWI  | .8                  | 1.4        | 1.6         | 1.6         | 1.4         | 1.6         | 1.5         | 1.6         | 11.4%              | 386                |
|                           | Old Mov. | .2                  | .3         | .4          | .6          |             |             |             |             |                    |                    |
|                           | New Mov. | .2                  | .3         | .4          | .5          | .4          | .4          | .4          | .4          | n.a.               | n.a.               |
| Injury<br>or Fatal        | Old OWI  | .7                  | .6         | .8          | .8          |             |             |             |             |                    |                    |
|                           | New OWI  | .3                  | .5         | .6          | .7          | .6          | .5          | .6          | .6          | 4.4%               | 386                |
|                           | Old Mov. | .9                  | .8         | .8          | .8          |             |             |             |             |                    |                    |
|                           | New Mov. | .7                  | .7         | .7          | .8          | .8          | .6          | .7          | .6          | 5.6%               | 354                |
| Any<br>Crash              | Old OWI  | 2.0                 | 2.0        | 2.0         | 2.0         |             |             |             |             |                    |                    |
|                           | New OWI  | .7                  | 1.2        | 1.5         | 1.7         | 1.4         | 1.1         | 1.3         | 1.4         | 10.4%              | 384                |
|                           | Old Mov. | 2.7                 | 2.5        | 2.1         | 2.2         |             |             |             |             |                    |                    |
|                           | New Mov. | 2.1                 | 2.0        | 2.0         | 2.1         | 1.9         | 1.7         | 1.5         | 1.6         | 14.8%              | 341                |
| Non-<br>Alcohol<br>Arrest | Old OWI  | 3.3                 | 3.4        | 3.1         | 2.9         |             |             |             |             |                    |                    |
|                           | New OWI  | 1.3                 | 2.5        | 2.8         | 2.8         | 2.7         | 2.4         | 2.4         | 2.3         | 19.2%              | 379                |
|                           | Old Mov. | 7.0                 | 5.8        | 4.9         | 4.2         |             |             |             |             |                    |                    |
|                           | New Mov. | 6.0                 | 4.9        | 4.6         | 4.2         | 3.5         | 3.2         | 2.9         | 2.8         | 32.0%              | 309                |

Note: Entry is percent of drivers whose first subsequent event of the type indicated occurred in indicated number of days.

The right portion of Table 10 shows subsequent activity for the new law groups for the period 12 to 24 months following conviction. This represents new data added as part of the present study. The purpose for adding these data was to determine whether or not the new law group remained "flat" over this extended period or whether there were any long term negative effects that could counteract the positive effects reported earlier.

The present results show no such negative effects. OWI recidivism in the new law group was 1.6% per three months in the period from six to twelve months following conviction. The figures for months 12 to 24 ranged from 1.4% to 1.6%. Similarly, for fatal and injury crash involvements the six to twelve month figures ranged from .6% to .7% as compared with .5% to .6% for the 12 to 24 month period. For all crash involvements (includes property damage only) the figures ranged from 1.5% to 1.7% for the six to twelve month period as compared with 1.1% to 1.4% for the 12 to 24 month period. For non-alcohol moving violations the figures were 2.8% for the six to twelve month period as compared with 2.3% to 2.7% for the 12 to 24 month period. All of these figures indicate that the crash and violation involvements of the new law OWI group beyond the twelve months covered in the earlier study either remained flat or decreased during the 12 to 24 month period. Thus, there is no evidence for a "backlash" or other effect that might counteract the positive effects found in the earlier study.

One limitation in the results shown in Table 10 is that the old law groups were not similarly tracked for an additional twelve months. The problem is that tracking of these groups for a full 24 month period would have placed much of their driving beyond the May 1, 1982 implementation of the new law. Thus, the old law group would have to be re-defined as the "mostly old and partly new" old law group. Nevertheless, tracking the old law group for an additional period of time was of interest.

As discussed above, the old law groups (OWI and Other Moving) received their input convictions between May 1, 1980 and April 30, 1981. These individuals were then tracked for twelve months which in all cases ended prior to May 1, 1982 which was the start of the new law. One approach for tracking the old law group for additional months was to take only those individuals who were convicted early in the sampling year. Someone convicted in June of 1980, for instance, could be tracked for 22 months and still not cross the May, 1982 start of the new law. Similarly, someone convicted in October of 1980 could be tracked for 18 months without crossing the May, 1982 start of the new law.

Both the new law and the old law groups were limited to include only those drivers whose input conviction occurred during the first six months of their respective sampling years. This limitation meant that each of the old law drivers meeting this criterion could be tracked for at least 18 months without crossing the May, 1982 start of the new law. The imposition of this same limitation on the new law groups meant that both the new and old law drivers would be driving during the same months of their respective years so as to eliminate any seasonal biases. Table 11 shows the sample sizes and group compositions resulting from this limitation. These newly formed groups were quite similar to the groups shown in Table 9 though the sample sizes are reduced by about half.

Table 11.  
Composition of Old Law and New Law Groups  
(18 month analysis)

|  | <u>First Conviction<br/>Drinking Drivers</u> |                            | <u>Convicted of Other<br/>Moving Violations</u> |                            |
|--|--|----------------------------|---|----------------------------|
|  | <u>Old Law<br/>'80-'81</u>                   | <u>New Law<br/>'82-'83</u> | <u>Old Law<br/>'80-'81</u>                      | <u>New Law<br/>'82-'83</u> |
| N =  | 8,174  | 7,906                      | 22,209  | 19,670                     |
| % male   | 86%  | 86%                        | 74%   | 72%                        |
| Median age (years)   | 25.4   | 25.4                       | 26.8%   | 27.4%                      |
| % with one or more<br>non-alcohol violations<br>in prior 12 months | 26.4%  | 21.2%                      | 18.8%   | 15.8%                      |

Table 12 shows the subsequent violations and crashes for these newly formed "18 month analysis" groups. As before, the results show marked reductions in violations and crashes for the new law OWI group as compared with the old law OWI for the first three months and some reductions during the next three months. More importantly, as was indicated in Table 10, there is no indication of negative effects for the 12 to 18 month period.

One anomaly in Table 12, which is the direct result of the way these groups were selected, should be noted. Specifically, OWI arrests for the old and new other moving groups are extremely low during the first six months following their input conviction. These low numbers lead to very high numbers under the column labelled "average number of days" (to the first recidivating event). This occurs because the OWI groups took priority over the other moving groups during sample selection. Thus, an OWI conviction would have overridden any other moving violation and the driver would likely have been included in one of the OWI groups. For instance, if a driver had a speeding arrest and conviction in May, 1980 followed by an OWI arrest in June followed by conviction in July, then that individual would have qualified for the old law OWI group. That individual would not be counted as a member of the old law other moving group with an OWI arrest within the first three months.

The 18 month overall or total results are shown in the column labeled days "1-545" in Table 12. It can be seen that for each type of activity (OWI arrest, injury or fatal crash, any crash and non-alcohol convictions) the New Law OWI Group had fewer involved drivers than the Old Law OWI Group across the full 18 month time period. These differences were compared for each type of activity using the t-test. For these comparisons, the data were "weighted" as a function of the observed differences between the Old and New Moving Violation Groups. Simply, the two Moving Violation Groups also showed differences with respect to each activity type and these differences may have represented real changes in Wisconsin traffic conditions or enforcement practices.

Weighting was accomplished by applying the ratio of the observed differences in the Moving Violation Groups to the OWI Groups. Specifically, for subsequent OWI recidivism, the ratio in the Moving Violation Groups was .841 (1.795 / 2.134). Thus, the "expected" result in the OWI Groups would be that the New Law Group had 84.1% of the OWI convictions of the Old Law Group. Therefore, the Old Law percent recidivism (11.072%) was multiplied by .841 to obtain a weighted figure (9.313%). The weighted difference, 9.313% for the Old Law Group versus 7.956% for the New Law Group, was compared and found to be statistically significant ( $t = 2.93, p < .01$ ). Similarly, the weighted difference for injury and fatal crash involvements (3.964% versus 3.415%) was significant ( $t = 1.85, p < .05$  one tail). The weighted difference for any crash (10.168% versus 7.792%) was also significant ( $t = 5.27, p < .001$ ) as was the weighted difference for non-alcohol moving violation involvements (16.369% versus 13.951%,  $t = 4.27, p < .001$ ).

These results indicate that the New Law Group had fewer subsequent crash and violation involved drivers than the Old Law Group as measured over an 18 month period. Also, as shown in the last column of Table 12, their subsequent crashes and violations took longer, on average, to occur.

Table 12.

Percent of Drivers with Subsequent Events  
(18 month analysis)

| Event              | Group    | Days to First Event |            |             |             |             |             | Total<br>1-<br>545 | Avg No.<br>of Days |
|--------------------|----------|---------------------|------------|-------------|-------------|-------------|-------------|--------------------|--------------------|
|                    |          | 1-<br>90            | 91-<br>180 | 181-<br>270 | 271-<br>365 | 366-<br>455 | 456-<br>545 |                    |                    |
| OWI<br>Arrest      | Old OWI  | 2.2                 | 1.7        | 1.9         | 2.0         | 1.8         | 1.5         | 11.1%              | 258.7              |
|                    | New OWI  | .9                  | 1.2        | 1.5         | 1.6         | 1.5         | 1.3         | 8.0%               | 289.8              |
|                    | Old Mov. | .1                  | .1         | .4          | .6          | .5          | .5          | 2.1%               | 344.5              |
|                    | New Mov. | .0                  | .1         | .3          | .5          | .4          | .4          | 1.8%               | 343.3              |
| Injury<br>or Fatal | Old OWI  | .8                  | .7         | .7          | .8          | .6          | .7          | 4.3%               | 265.0              |
|                    | New OWI  | .4                  | .5         | .6          | .8          | .6          | .5          | 3.4%               | 287.5              |
|                    | Old Mov. | .9                  | .7         | .7          | .9          | .6          | .6          | 4.5%               | 254.6              |
|                    | New Mov. | .7                  | .7         | .6          | .8          | .8          | .5          | 4.2%               | 268.1              |
| Any<br>Crash       | Old OWI  | 2.3                 | 2.2        | 2.0         | 1.8         | 1.6         | 2.1         | 11.9%              | 260.8              |
|                    | New OWI  | .7                  | 1.3        | 1.5         | 1.6         | 1.4         | 1.3         | 7.8%               | 290.2              |
|                    | Old Mov. | 2.6                 | 2.7        | 2.3         | 2.1         | 1.8         | 2.0         | 13.4%              | 250.2              |
|                    | New Mov. | 2.0                 | 2.1        | 1.9         | 1.9         | 1.9         | 1.8         | 11.5%              | 265.8              |
| Non-<br>Alcohol    | Old OWI  | 3.5                 | 3.0        | 3.2         | 3.5         | 2.8         | 2.3         | 18.4%              | 256.6              |
|                    | New OWI  | 1.3                 | 2.1        | 2.7         | 3.0         | 2.7         | 2.1         | 14.0%              | 291.0              |
|                    | Old Mov. | 7.7                 | 5.8        | 5.0         | 4.5         | 3.6         | 2.7         | 29.4%              | 221.4              |
|                    | New Mov. | 6.1                 | 4.7        | 4.7         | 4.3         | 3.4         | 2.9         | 26.2%              | 235.7              |

The present results and the results shown in the earlier report provide a strong argument for the specific deterrent value of a three to six month license suspension for first time convicted drinking drivers. Drivers subjected to this suspension had fewer crashes and fewer alcohol and non-alcohol convictions than drivers convicted of drinking and driving before the Wisconsin mandatory suspension law was implemented. Much of the effect is seen during the first three to six months when the mandatory suspension is in effect.

## VI. CONCLUSIONS

Wisconsin implemented mandatory three to six month license suspension in May of 1982. The implementation of the law in Wisconsin was such that 100% of the OWI convicted drivers were actually subjected to this penalty. This is felt to be a key feature of the Wisconsin law, was one of the primary reasons for selecting Wisconsin for the earlier study and clearly distinguishes Wisconsin from many of the other states with similar legislation.

The earlier study clearly demonstrated the value of the 1982 law in reducing alcohol related traffic events. There was a statewide 20% to 30% reduction in the "alcohol series" crashes at about the time that the law was being publicized. There was also clear evidence that drivers convicted under the "new" 1982 law had fewer subsequent crashes and violations than drivers convicted two years earlier under the "old law."

The statewide crash reduction, which began in January of 1982, appeared to represent a permanent change in Wisconsin. Data available to the earlier study indicated that this reduction remained, virtually unchanged, through December of 1985. Permanent change, as opposed to temporary effects, are rare in the drinking and driving literature. The present follow up study extends our estimate of this "permanent" alcohol related crash reduction through December of 1986.

It is felt that this permanent reduction is associated with the mandatory suspension provisions of that law. However, it must be noted that the law changed many aspects of drinking and driving adjudication and rehabilitation at that time and the law itself made a clear statement that Wisconsin was quite serious in its desire to reduce drinking and driving. Any one or all of these features may have contributed to crash reduction.

The results from the convicted driver recidivism analysis appear more directly related to the mandatory suspension aspect of the 1982 law. Subsequent crash and violation involvements for OWI convicted drivers were greatly reduced during the three to six month term of the mandatory suspension. Following the suspension, crash and violation rates rose such that they were comparable to the rates for drivers convicted before the 1982 law. The earlier study showed comparable rates for the time period six to twelve months following conviction. The present follow up shows comparable rates out to 18 months and suggests comparable rates to 24 months following conviction.

The present study also shows some lingering effects of the 1985 media program in Milwaukee. Motorist knowledge that convicted drinking drivers will lose their license is still above the baseline or pre-program level and other effects of the program still appear to be present.

It is felt that 100% mandatory license suspension (or revocation) is an effective sanction for convicted drinking drivers. The experience of Wisconsin is that alcohol related crashes and violations can be reduced both for the general population and for those convicted drivers subjected to the mandatory suspension.